The Price of Beauty: Unveiling the Microplastic in Cosmetics

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Introduction

Introduction

We are three juniors from Minglun High School, and we have many friends who love to makeup for beauty, sometimes students buy drugstore brands because they are cheap and have many choices.

But did you know that cosmetics may contain lots of microplastics ? or will they harm our body?

We will tell you the answer through the following presentation.

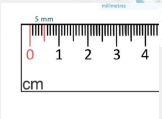
Introduction

We chose two types of cosmetics for the experiment to observe the content of microplastics.

1. Lipsticks or lip balms: when we applied to the lips, it is even more likely to be ingested.
2. Blushes: when we used it, the powder disperses into the air and can be inhaled into the respiratory system.

Literature Review

Literature Review



What are Microplastics? Where do they come from?

1. Microplastics are tiny plastic particles less than 5 millimeters in size.
2. They originate from a variety of sources including cosmetics.
3. They pose potential risks to wildlife and human health.

➡ Many cosmetic products contain plastic irritants that can cause skin reactions, including rashes and dermatitis.

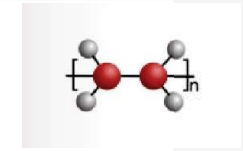
Literature Review

We check the microplastics are harmful to the human body by using the research conducted by UNEP, TAUW, and ECHA. We consider these reports to be the best-substantiated overview currently available.
The following are microplastic commonly found in cosmetics:

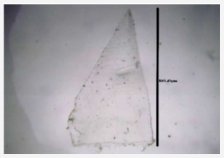
1 . Polyethylene (PE): In blushes and lipsticks.
2 . Polypropylene (PP): In lip products.
3 . Polybutene(PB): In lipsticks.
4 . Polyamide(Nylon): In lip balms.

Polyethylene (PE)

Functions: Thickening Agent, Film-Forming Agent



From Wikipedia



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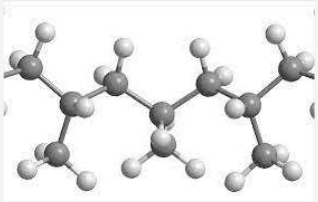
Polypropylene(PP)

Functions: Thickening Agent, Film-Forming Agent



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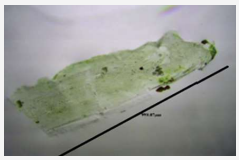

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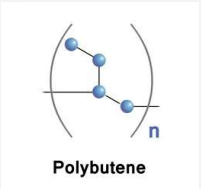
Polybutene (PB)

Functions: Adhesive Properties, Emollient



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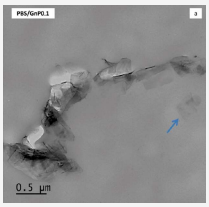

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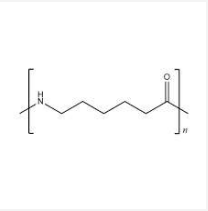
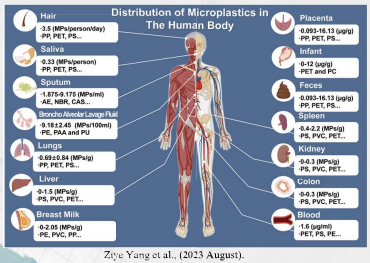
Polyamide(Nylon)

Functions: Texturizer, Film-Forming Agent



Literature Review

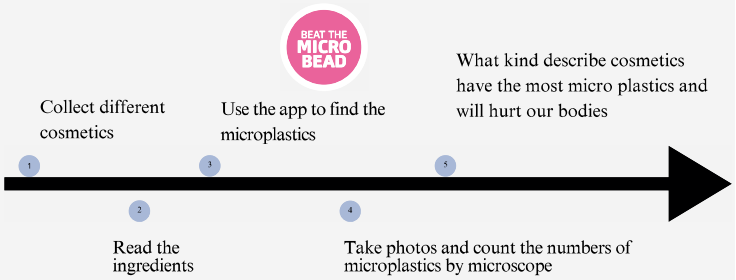


Ziye Yang et al., (2023 August).

Microplastics may be absorbed by organisms in the food chain and enter the human body, possibly causing endocrine disruption and other health problems.

Research Methods

Research Methods



The app designer —Plastic Soup Foundation

1.Concerned with stopping plastic pollution at its source.
2.They help people learn about how bad the plastic can be for our health and environment
3.They work with companies and governments to create rules that reduce plastic use, like banning tiny plastic beads in cosmetics.

PLASTIC SOUP FOUNDATION

BEAT THE MICRO BEAD

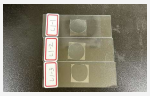
Analysis and Results

Carxxx lip balm

Microplastic Ingredient
Polypropylene
Polyamide

sample / Microplastic	1-1	1-2	1-3	average
Polypropylene	4	0	8	4
Polyamide	1	0	0	1/3

Product



Carrier slice

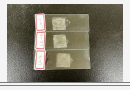
400X sample under the microscope

MISxxxE lipstick

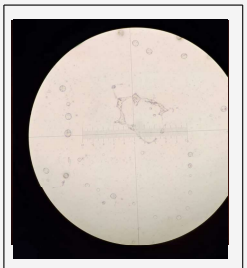
Microplastic Ingredient
Polybutene

sample / Microplastic	2-1	2-2	2-3	average
Polybutene	9	4	11	8

Product



Carrier slice



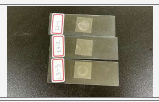
400X sample under the microscope

MISxxxE 07 lipstick

Microplastic Ingredient
Dimethicone
Polyethylene

sample / Microplastic	3-1	3-2	3-3	average
Dimethicone	200	150	100	150
Polyethylene	13	1	0	14/3

Product



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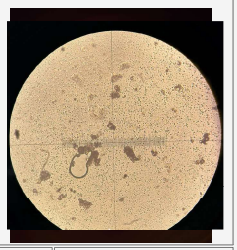


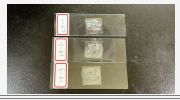
400X sample under the microscope

Vaxxxxne lip balm

Microplastic Ingredient
NOPE!

sample / Microplastic	4-1	4-2	4-3	average
others	0	0	0	0

Product



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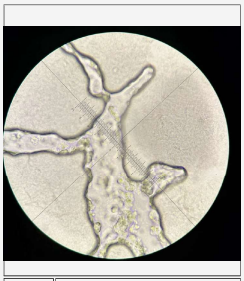


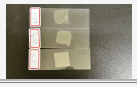
400X Sample under the microscope

YSL 04 lipstick

Microplastic Ingredient
Microcrystalline Wax, Synthetic Wax

sample / Microplastic	5-1	5-2	5-3	average
Microcrystalline Wax	0	0	0	0
Synthetic Wax	1	1	1	1

Product



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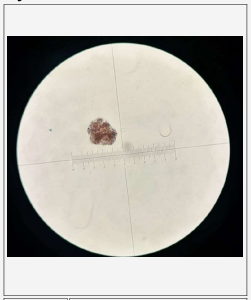


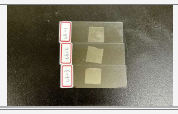
400X sample under the microscope

TxE WxxO lipstick

Microplastic Ingredient
Ethylene/Propylene copolymer,
Hydrogenated polyisobutene, Diphenylsiloxy phenyl trimethicone

sample / Microplastic	6-1	6-2	6-3	average
Ethylene/ Propylene copolymer	x	x	x	x
Hydrogenated polyisobutene	x	x	x	x
Diphenylsiloxy phenyl trimethicone	x	x	x	x

Product



Carrier slice

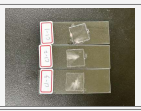
400X Sample under the microscope

Microplastic Ingredient

Cxxxr Sxxg blush

sample / Microplastic	1-1	1-2	1-3	average
Microplastics	101	307	96	168

Product



Carrier slice

400X | sample under the microscope

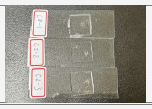
Microplastic Ingredient

Kxxe blush

Phenyl Trimethicone

sample / Microplastic	2-1	2-2	2-3	average
Phenyl Trimethicone	13	208	68	96

Product



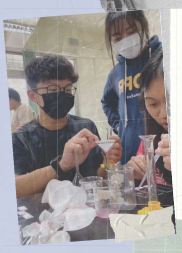
Carrier slice

400X | sample under the microscope

Hypothesis

1. The brighter the cosmetic is, the more microplastics it contains.
2. Blushes contain more microplastics than lipsticks and lip balms.

Conclusion



Microplastics are not as big as plastic bags and are not so easy to see, so the harm to the environment is easily overlooked. Especially the microplastics in cosmetics are very small and cannot be intercepted by ordinary filtration systems. They will flow into rivers through the washing process, and eventually enter the ocean, where the harm may be even greater.

Suggestions

The more we know, the better decisions we can make. We can choose what to buy based on our own judgment, not just because of advertisements from cosmetic companies.

References

- Ziye Yang et al., (2023 August). Human Microplastics Exposure and Potential Health Risks to Target Organs by Different Routes: A Review. Current Pollution Reports 9(18):1-18
- https://www.mdpi.com/
- https://reurl.cc/Mjeepv
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